Attorney's Docket No. <u>80398.P364</u>   PATENT

UNITED STATES PATENT APPLICATION

for

IMAGE DATABASE JOG/SHUTTLE SEARCH

Applicants:

Robert Jay Sato
John Tree
Kurt Jonach

prepared by:

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard
Los Angeles, CA 90026-1026
(408) 720-8598

EXPRESS MAIL CERTIFICATE OF MAILING

"Express Mail" mailing label number <u>EL143556898US</u>
Date of Deposit _____ *October 24, 2000*_____
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
_____Cindy Murphy_____
(Typed or printed name of person mailing paper or fee)
_____
(Signature of person mailing paper or fee)

IMAGE DATABASE JOG/SHUTTLE SEARCH

RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No.

5   60/181,843, filed February 11, 2000.

FIELD OF THE INVENTION

This invention relates generally to computers, and more particularly to allow

viewers to search through images that are controlled by a dial.

10

COPYRIGHT NOTICE/PERMISSION

A portion of the disclosure of this patent document may contain material which is

subject to copyright protection. The copyright owner has no objection to the facsimile

reproduction by anyone of the patent document or the patent disclosure as it appears in the

15   Patent and Trademark Office patent file or records, but otherwise reserves all copyright

rights whatsoever. The following notice applies to the software and data as described

below and in the drawings hereto: Copyright © 1999, Sony Electronics, Inc., All Rights

Reserved.

20   ## BACKGROUND OF THE INVENTION

Presentation software exists that allows a computer to individually display a series

of "slides" which are linked in a linear order. The slides may be a combination of text,

pictures, and video. Advancing from one slide to the next, in either forward or backward

direction is accomplished through the use of a mouse clicking on an arrow feature on the

monitor. In this manner, viewing a number of slides is slow and requires a time consuming use of the mouse to accomplish. In addition, photograph manager software for computers provide illustration of individual pictures or may provide a number of pictures simultaneously in a single display, again through the use of the mouse click and select

5   feature. When large numbers of images are to be viewed, these approaches are inadequate in that the viewing rate from image to image is slow and manipulation of the viewing features is not intuitive.

SUMMARY OF THE INVENTION

10   The ability to store files in electronic format makes it desirable to visually scan a large number of files quickly and easily. The present invention couples a dial to software for the purpose of displaying a plurality of files, often a group of photographs, in a linear order.

The present invention describes systems, clients, servers, methods, and computer-

15   readable media of varying scope. In addition to the aspects and advantages of the present invention described in this summary, further aspects and advantages of the invention will become apparent by reference to the drawings and by reading the detailed description that follows.

20

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an illustration an implementation of a dial and software with file sets;

Figure 2 is an illustration of an overview of obtaining files from a variety of sources for display;

5   **Figure 3** is a flow diagram of software suitable for practicing the invention;

Figure 4a is a flow diagram of a client interacting with a server; and

Figure 4b is a flow diagram of processing elements of a typical computer.

DETAILED DESCRIPTION OF THE INVENTION

10   In the following detailed description of embodiments of the invention, reference is made to the accompanying drawings in which like references indicate similar elements, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other

15   embodiments may be utilized and that logical, mechanical, electrical and other changes may be made without departing from the scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims.

As illustrated in **Figure 1**, the invention couples a dial with computer software to

20   sequentially display files that are sequentially linked (file set) 102. In one embodiment, the files displayed may be images and may be displayed in thumbnail version, where the images can be viewed individually and sequentially at variable speeds. The speed for sequencing through the linked images may be set high enough to perceive the images displayed as a blur, slower to perceive the images as a video, or sequencing may be still on

25   one image. The file set 102 may be viewed in both forward and backward directions.

Control or navigation of the file set 102 is accomplished through the use of software 104 and a physical dial 106 or a visual dial equivalent such as a graphical user interface (GUI).

The dial 106 has several advantages over the use of conventional computer input devices such as a mouse or keyboard. The first is that the dial's 106 use is intuitively obvious to a viewer because of the viewer's prior experience with dials that operate other devices. Secondly, the dial 106, interfaced to a computer 108, may allow a series of files 102 to be easily displayed, in a manner ideally suited to the viewer's present need.

For instance, turning the dial 106 to the right or left will sequence the file set 102 display forward or backward. Next, the speed for searching through the file set 102 can be as desired, in that turning the dial 106 further in a direction from a dial stop position, can sequence the file set faster or slower. Such "fine tuning" of the dial's 106 radial movement allows the viewer to quickly "hone in" on particular files 110 for selection and viewing. In addition, the dial 106 may be "pushed-in" to perform a function such as the selection of a particular file or the release of a selected file. Once selected, the file(s) may then be flagged for easy return, for changing the order of display of individual files within the file set, for removal of files from the file, etc.

In order to import files, software implementation 104 of the dial 106 allows the dial 106 to adapt to any file storage method, such as a folder or directory in a file system, an image database, or a particular storage medium such as disc or memory modules.

Arrangement may be accomplished of the file set list 102 into an "album" to include any number of files. The file set 102 may be collected for a variety of purposes such as for use in a formal presentation, a set of home images available on the housing market, or to display personal photographs taken on a family vacation. The finished file set 102 may be used for either public access or for private access by an originator.

Multiple types of content can be placed into the file set; including text, graphics, still images, video, audio and/or a mix of multimedia data types. Thus, the file set may take on different forms, such as a movie with audio and video content, an audio-only display, a text-only display, or a text with still image illustrations.

5   Beginning with an overview of the operation of the invention, **Figure 2** illustrates one embodiment of a file viewing or navigation system 200. Using file navigation software (Navigator) 204 interactive with the movements of a dial 206, individual files 205 of a file set (of linearly linked files) 202 are displayed in a sequential order. Using Navigator software 204 and the dial 206, a file set 202 may be created from one or more

10   locations 210 such as the Internet, a file on a hard disk, a local network server, a CD ROM, a DVD, or a floppy or zip drive. After creation of the file set 202, the individual files may be moved to a common location or left at the original locations. Once selected, the images may be linked together into the file set 202 where the file set 202 is accessed and viewed in a linear order. The images 202 may be placed in an order determined by a

15   variety of methods such as by originator/viewer choice, the order of selection, by file format, or by location of the file. The still images 202 may be of differing formats such as jpeg, gif, or bitmap. The files 202 displayed may include a variety of other types of content such as text, graphics, video, audio and/or a mix of multimedia data types.

In one embodiment, as shown in **Figure 3**, from within the Navigator software

20   304, the viewer may decide to create a new file set 312 or call-up an existing file set 314. Existing file sets can be linked 316, individual files sets can be modified 318, and finally a search/view 320 the file set may be accomplished.

Once a file set is selected with the Navigator 304, the Navigator 304 connects the dial controls 306 with the file set and provides an initial display 320. The Navigator may

25   select any file location in the file set to initially display. Such an initial file display could

be of an image located at the beginning or in the middle of the list. The Navigator dial 306 may turn 360° with no stops and, as such, may be pre-set to the null or stopped position on the initially displayed image. It is to be appreciated that not all blocks within the **Figure 3** flow diagram are needed and that the order of blocks are not important to practice the disclosed invention.

The dial may be a physical device located internal (built-in) to the computer or external to the computer (such as connected to the computer through a serial/parallel bus) and can be operated manually. However, it is possible to have the dial presented on a computer monitor as a visual or GUI dial that can be operated in a manner similar to the physical dial. The visual dial may be manipulated by voice command or by rotating/pushing the visual dial with a mouse, a keyboard, a touch sensitive pad, or a touch sensitive monitor. The visual dial may not appear as a dial but could by any visual representation that accomplishes the same easy use as the visual dial. Such alternate shapes could include plus/minus buttons or a "sliding" button on a bar.

In one embodiment, turning the dial to the right of the stopped position causes files to be displayed one after another in a linear fashion. In this manner, each file is fully displayed in the order linked before progressing to the next image in the file set. The display of files progresses in a direction along the file set, such as turning the dial to the right past stop could progress the display of files in one direction (forward) while turning the dial to the left of stop could progress the display of files in an opposite (backward) direction. In addition, the further the dial is turned from the stop point, the faster the files are sequentially displayed. At some point, the speed of displaying files one after another would be such that some files might be skipped from display. Based on an algorithm in the Navigator software, depending on the speed of sequencing, displayed files might be every

other image, every fifth image, every nth ... to be sufficient to provide the desired displaying appearance during high speed traversing of the file set.

Once a desired file has been located (the dial at stop and the file displayed), the dial may be pushed in to select the file. The affect of the selection may be to flag the file
5 for easy return to that file in the future, to remove the file from the file set, or to collect (remove or copy) a series of files from the file set to place into a new file set.

The Navigator software can be located at the viewer's computer, however it is also possible to locate the Navigator software at a server on a network or over the Internet to function for viewers remotely. In this case, the host Navigator could activate the physical
10 dial on the viewer's computer or provide an interactive visual dial on the viewer's monitor. In this manner, a series of files can be rapidly searched and displayed through the web or network for an endless number of purposes. A remote viewer may: log onto a friend's web site and view a new set of family pictures; log onto a web site of a realty company to see available homes on the housing market; a photography business to view a
15 portfolio; for employee access to company archived images; police suspect image lists; missing people image lists; maps; etc.

In the case where two-dimensional travel/viewing is desired, such as when viewing the map, the Navigator could link a number of file sets together to allow a viewer to view the map. The dial could travel "up" and "down" map images of an individual file set
20 where the terrain of a second image begins where a previous terrain image left off. In addition, pushing in the dial could allow the viewer, when rotating the dial, to jump sequentially to images in other file sets in a manner that would let the viewer travel "right" and "left" on the map. The resulting effect would be to provide the viewer with a method to easily travel/view across an entire map made from these specially cross-linked file sets.

It is possible to have a remote computer for a remote user execute a conventional Internet browsing application or a network application to exchange data with the Navigator residing on a server. Therefore, it is readily apparent that the present invention is not limited to private use by a single viewer. In an embodiment, an administrator of a

5   web site or network may set rating criteria for the images available over the web or network to prevent the posting of information which may be offensive or limited to some viewers. In the case where the invention is practiced over the Internet, it is possible to allow an originator of a file set to market files through such Internet access as well as to have the originator provide marketing banners within a web site.

10   One embodiment of a computer system suitable for use as the host server is illustrated in **Figures 4a & b**. Additionally, **Figure 4b** is suitable as one embodiment of a computer system of a standalone computer. The computer system 441, includes a processor 450, memory 455 and input/output capability 460 coupled to a system bus 465. The memory 455 is configured to store instructions which, when executed by the

15   processor 450, perform the methods described herein. The memory 455 may also store data and content related to the stories. Input/output 460 provides for the delivery and display of the content of the story or portions or representations thereof. Input/output 460 also encompasses various types of computer-readable media, including any type of storage device that is accessible by the processor 450. One of skill in the art will immediately

20   recognize that the term "computer-readable medium/media" further encompasses a carrier wave that encodes a data signal. It will also be appreciated that the server 401 is controlled by operating system software executing in memory 455. Input/output and related media 460 store the computer-executable instructions for the operating system and methods of the present invention as well as the data and content related to the images.

The description of **Figures 4a & b** is intended to provide an overview of computer hardware and other operating components suitable for implementing the invention, but is not intended to limit the applicable environments. It will be appreciated that the computer system 440 is one example of many possible computer systems that have different architectures. A typical computer system will usually include at least a processor, memory, and a bus coupling the memory to the processor. One of skill in the art will immediately appreciate that the invention can be practiced with other computer system configurations, including multiprocessor systems, minicomputers, mainframe computers, and the like. The invention can also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network.

The use of the disclosed invention for providing rapid access to a list of files is endless. One example has a potential buyer accessed via the Internet to an all night auction site such as eBay™. The potential buyer can view one of many linked sets of images available. The list may be created through a set of instructions driven by the potential buyer's requests. The potential buyer may request to see all 1950's Chevrolet's for sale. Based on this request, a list is assembled, the potential buyer's physical dial is enabled or a dial appears on the potential buyer's screen, and the buyer has access to the list of images of available 1950's Chevy's. The potential buyer can then quickly scroll through the list of vehicle images to quickly decide if any are of interest. Vehicles that are of interest can be selected and the selection process can activate further information screens having more detail. In this manner, an evaluation of available automobiles, that are of interest to the potential buyer, can be quickly and efficiently determined.

A set of linearly linked files (file set) that are connected by software to a dial for easy search and viewing has been described. The size of the set of files can vary with the

need and type of review and a search of the file set can be accomplished at a variable rate with the turn of a dial. The files displayed can be private or made available on the Internet to the public or on a smaller scale such as a local network. Through the use of the dial, the files can be viewed sequentially backward or forward and at whatever speed supported by the computer throughput. Using the push-in (or pull-out) feature of the dial, file sets may be cross-linked for 2D viewing such as with a map, individual files may be selected to be moved around in sequence, new files added, old files removed, or files of interest flagged to locate and return to easily in the future.

In one embodiment, the dial allows for a quick and easy search of a large number of files. However, the dial may set to sequence a series of images that tell a story or may take the form of a movie, or it may be a text story with still image illustrations.

Next, the particular aspects of the invention are described in terms of computer software with reference to a series of illustrations and a flow diagram. **Figure 3** provides a software flow diagram that executes the process of file selection and display that is illustrated in **Figure 2**. The methods constitute computer programs made up of computer-executable instructions. Describing the methods by reference to a flow diagram enables one skilled in the art to develop such programs including such instructions to carry out the methods on suitably configured computers (the processor of the computer executing the instructions from computer-readable media). If written in a programming language conforming to a recognized standard, such instructions can be executed on a variety of hardware platforms and for interface to a variety of operating systems. In addition, the present invention is not described with reference to any particular programming language. It will be appreciated that a variety of programming languages may be used to implement the teachings of the invention as described herein. Furthermore, it is common in the art to speak of software, in one form or another (e.g., program, procedure, process, application,

module, logic...), as taking an action or causing a result. Such expressions are merely a shorthand way of saying that execution of the software by a computer causes the processor of the computer to perform an action or a produce a result. Finally, it should be appreciated that all instructions depicted in the **Figure 3** flow diagram need not be performed by software resident at a user's computer. The various components of the **Figure 3** flow diagram may be performed over the Internet or over a network by a host server.

A way to search a potentially large number of files has been described that allows one or more viewers to rapidly search those files and to select any of those files that are of interest. Although specific embodiments have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that any arrangement which is calculated to achieve the same purpose may be substituted for the specific embodiments shown. This application is intended to cover any adaptations or variations of the present invention.

For example, those of ordinary skill within the art will appreciate that while invention as been described in terms of creating a list of picture images, it encompasses all types of story media, including pure text, illustrated text, the combination of audio and video, and audio only.

The terminology used in this application with respect to networks is meant to include all of environments in which a server computer communicates with client computers to send and receive data. Therefore, it is manifestly intended that this invention be limited only by the following claims and equivalents thereof.